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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/026,475	02/19/98	PAYN C	C1136/20002

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EXAMINER	
CALCAGNI, J	
ART UNIT	**PAPER NUMBER**
1762	6

DATE MAILED: 06/21/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/026,475	Applicant(s) Payn et al.
	Examiner Jennifer Calcagni	Group Art Unit 1762

☒ Responsive to communication(s) filed on *May 7, 1999* .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *three* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *2-13, 15, 18, and 19* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *2-13, 15, 18, and 19* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *2-3*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claim Objections

1. Claim 6 is objected to because of the following informalities: In line 6 of the claim, the language should read "will not induce polymerization at an appreciable rate." Appropriate correction is required.

2. Claim 7 is objected to because of the following informalities: It was unclear to examiner if applicant intended claim 7 to depend from claim 11 or if claim 7 is to depend from another claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "each of the side of the fabric" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 6 and the specification are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The term "metallocene" is critical or essential to the practice of the invention, but not adequately defined in the claim(s) and is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Applicant refers to a "metallocene polyolefin." The proper term is a metallocene catalyzed polyolefin. In addition, Examiner believes that the term "metallocene," as used by the applicant, is broader than it should be interpreted. For example, on page 33, line 13, of the specification, applicant refers to a metallocene manufactured by Dow Chemical. This is objectionable since the material made by Dow Chemical, as exemplified by Lei et al., patent number 5,525,695, is not produced by a metallocene, but instead by a constrained geometry catalyst. Examiner would suggest that the applicant change the term "metallocene" to "single-site" catalyst throughout the specification and the claims, because a metallocene catalyst is a type of single-site catalyst and this term better defines the class of compounds that applicant is claiming.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 2-6, 9-10, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. in view of Timmers et al. or Brandt et al.

Applicant claims a process for preparing a coated material.

Wong et al., in column 3, lines 1-43, and in column 4, lines 11-68, teaches a process for the grafting of ethylenically unsaturated monomers, especially carboxylic acids and anhydrides, onto polymers of ethylene in the presence of low levels of organic peroxide. Wong et al. teaches that the polyolefin of the admixture fed to the extruder may be a homopolymer of ethylene and/or a copolymer of ethylene with at least one C_4-C_{10} higher alpha-olefin, especially copolymers of ethylene with butene-1, hexene-1 and/or octene-1. Wong et al. teaches that the physical admixtures to the extruder contain an organic peroxide and a monomer that is ethylenically unsaturated and which is capable of reacting with molten polyolefin, especially in the presence of an organic peroxide. Wong et al. teaches that the monomer is preferably selected from the group

consisting of ethylenically unsaturated carboxylic acids and ethylenically unsaturated carboxylic acid anhydrides, derivatives of such acids, and ethylenically unsaturated hydrocarbons with other functional groups.

Wong et al., in column 5, lines 40-65, teaches that the amount of organic peroxide may depend on the amount and nature of any additives in the polyolefin and polymer. For example, the additives may include a stabilizing agent, slip agents, anti-blocking agents, anti-static agents, mold release agents, pigments, nucleating or other processing aids or the like. Wong et al., in column 7, lines 44-53, teaches that the resultant grafted polyolefins may be used as such, or as blends with other polymers, especially to improve adhesion of polyolefins to other materials, improve dye receptivity, compatibility with and/or retention of other materials e.g. additives in polyolefin or the like. Wong et al. teaches that the grafted polyolefins may be used in a wide variety of end-uses, including manufacture of film, molding into articles, extrusion of coating of metals and coextrusion processes, or the like.

Wong et al., in column 7, lines 55-68, and in column 8, lines 1-68, teaches that the grafted polymer is bonded to aluminum foil, followed by air drying for a period of time. Wong et al. teaches the use of extrusion to bond the grafted polymer to the aluminum.

Wong et al. does not teach that the steps of the process are carried out in a substantially inert environment.

Timmers et al., in column 18, lines 57-65, teaches ethylene/1-olefin copolymers that are characteristic of the type of ethylene polymers that can be obtained with metallocene catalysts.

Timmers et al., in column 19, lines 10-17, teaches that the polyolefins made with the catalysts of their invention can be shown to have superior properties, in applications such as films for packaging, foams, coating, insulating devices, and household items, over previously used materials in these applications. Timmers et al., beginning in column 20, in the examples, teaches that the formation of these polyolefins takes place in an inert atmosphere.

Brandt et al. also teaches the formation of ethylene branched olefin copolymers. Brandt et al., in column 18, lines 45-55, teaches that the reactions are performed in an oxygen and moisture free atmosphere, and that therefore the reactions are preferably performed in the presence of an inert dry gas such as helium or nitrogen.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed the steps of the process disclosed by Wong et al. in an inert environment so as to protect the components of the system from oxygen and moisture .

As to claim 6, Wong et al. teaches grafted polyolefins, but does not teach single-site catalyzed polyolefins. As described above, Timmers et al. teaches single-site catalyzed polyolefins. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use single-site catalyzed polyolefin, as taught by Timmers et al. as a suitable polyolefin in the method disclosed by Wong et al. because Wong is silent as to the type of polyolefin that is required and Timmers et al. demonstrates that single-site catalyzed polyolefins have superior properties over previously used materials.

Examiner acknowledges that Wong et al. does not teach 30-90 weight percent of single-site catalyzed polyolefin, 70 to 10 weight percent of at least one liquid monomer, or 0.2 to 15 parts per hundred of a compound that will initiate free radical polymerization. However, Wong et al., in column 6, lines 6-13, teaches that the amount of monomer will depend in particular on the reactivity of the monomer and the level of grafting that is to be achieved. It is examiner's position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum weight percent of the various components of the mixture through routine experimentation in the absence of a showing of criticality depending on the reactivity of the selected monomer and the desired level of grafting. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Examiner acknowledges that Wong et al. does not specify a compound that will initiate a free radical polymerization at 140 degrees Celsius or higher but that will not induce polymerization at an appreciable rate at 120 degrees Celsius or lower. However, Wong et al. in column 4, lines 38-55, does teach organic peroxides that have a half-life at 150 degrees Celsius of from about one minute to about 120 minutes.

As to claim 9, Wong et al., in column 7, lines 55-68, teaches that the obtained film was bonded to aluminum foil on a heat sealer equipped with a 2.5 centimeter wide bar using a jaw pressure of 4.2 kg/cm^2 and a jaw temperature of 180 degrees Celsius, and a dwell time of one second.

As to claim 10, Wong et al., in column 3, lines 33-68, and in column 4, lines 1-36, discloses that a second monomer may be added to the monomer mixture and that the monomer may contain several polymerizable groups. While Wong et al. does not specifically teach that the mixture produces a cross-linked system upon curing, it would have been obvious to one of ordinary skill in the art at the time the invention was made, that by utilizing a monomer mixture that contains several polymerizable groups, that upon curing, at least some cross-linking will take place in the mixture.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. in view of Timmers et al. or Brandt et al. as applied to claims 2-6, 9-10, and 18-19 above, and further in view of Ullman's Encyclopedia of Industrial Chemistry.

Wong et al. in view of Timmers et al. or Brandt et al. does not specifically teach that the polymerizable liquid has a boiling point and a flash point above 100 degrees Celsius. However, Wong et al., in column 5, lines 1-15, teaches various polymerizable liquids that may be used in the invention, including maleic acid. According to Ullman's Encyclopedia of Industrial Chemistry, maleic acid has a flash point and a boiling point above 100 degrees Celsius. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected an appropriate polymerizable liquid having a boiling point and a flash point above 100 degrees Celsius.

11. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. in view of Timmers et al. or Brandt et al. as applied to claims 2-6, 9-10, and 18-19 above, and further in view of Wright.

Applicant claims that the coating is applied to a woven synthetic fabric using knife coating, or that the coating is applied using a rod coater.

Wong et al. in view of Timmers et al. or Brandt et al. does not teach the use of a knife coater or a rod coater to apply the coating to a substrate.

Wright, in column 3, lines 65-67, and in column 4, lines 1-8, teaches a method for producing a coating on a substrate by applying a polymerizable composition containing a free radical polymerizable ethylenically unsaturated monomer to the surface of a substrate and irradiating the polymerizable composition with a krypton chloride excimer lamp to form a polymeric coating. Wright, in column 7, lines 62-66, teaches that the polymerizable composition comprising the ethylenically unsaturated monomer may be coated via any of a variety of conventional coating methods, such as roll coating, knife coating, or curtain coating. Wright, in column 8, lines 22-44, teaches that the compositions may be applied to a suitable flexible or rigid substrate, including a woven fabric formed of threads of synthetic fibers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use knife coating or roll coating, as taught by Wright, in the method taught by Wong et al. in view of Timmers et al. or Brandt et al. as a suitable means of applying the polymeric coating to the substrate because Wong et al. in view of Timmers et al. or Brandt et al. and Wright teach

similar coatings and substrates. In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of Wong et al. in view of Timmers et al. or Brandt et al. to apply the coating material to a woven synthetic fabric, as taught by Wright.

12. Claims 12-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. in view of Timmers et al. or Brandt et al. as applied to claims 2-6, 9-10, and 18-19 above, and further in view of Sahatjian et al.

Wong et al. in view of Timmers et al. or Brandt et al. does not teach that the coating step is repeated at least two times to build up a multi-layer coated substrate or that a melt calendering process may be used to coat both sides of the substrate simultaneously. Wong et al. in view of Timmers et al. or Brandt et al. also does not teach that the substrate is a fabric.

Sahatjian et al., in column 3, lines 8-68, and in column 4, lines 24-68, teaches a fluorinated monomer that may be a perfluorinated mono-olefin, where the mon-olefin is preferably a straight or branched chain compound having a terminal ethylenic double bond, where the fluoropolymer may contain a functional group such as carboxylic and sulfonic acid. Sahatjian et al. teaches that substrates that may be used include any suitable flexible material capable of withstanding the conditions used to form the laminate. Sahatjian et al., in column 5, lines 1-10, teaches that the substrate may comprise a yarn, filament, monofilament, or other fibrous material either as such or assembled as a woven or non-woven textile.

Sahatjian et al., in column 2, lines 3-25, teaches that a flexible and resistant composite is formed by laminating a thin film of the invention to one or both sides of a flexible substrate suitable for use as a garment, shelter, or covering. Sahatjian et al. teaches that when two layers of fluoropolymer are used, one on each side of the substrate, greatly increased chemical resistance is obtained. Sahatjian et al., in column 4, lines 33-49, teaches that the most preferred technique for preparing the film is casting in preparation for fusion roll lamination. Other techniques for film formation include melt extrusion or coextrusion and calendering. As seen in column 7, example 4, Sahatjian et al. teaches building up a multi-layer coated substrate where the multi-layers are of the same or different composition.

Wong et al. in view of Timmers et al. or Brandt et al. teaches that the grafted polyolefins of the invention may be used to improve the adhesion of polyolefins to other materials and to improve dye receptivity and may be used in a wide variety of end uses, including manufacture of film and coextrusion processes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wong et al. in view of Timmers et al. or Brandt et al. to coat fabric and to build up a multi-layer coated substrate or to coat both sides of the substrate simultaneously using a coating technique such as melt extrusion because both Wong et al. in view of Timmers et al. or Brandt et al. and Sahatjian et al. teach similar polyolefins and similar methods of applying the extrusion coatings to a substrate.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Vroomans, Graft Modified Linear Low-Density Polyethylenes, Process for Their Preparation and the Application Thereof, Patent Number 5,021,510, June 4, 1991; Hughes et al., Graft-Modified Substantially Linear Ethylene Polymers and Methods for Their Use, Patent Number 5,705,565, January 6, 1998; Winter et al., Olefin Polymerization Process by Using a Substituted Indenyl Containing Metallocene Catalyst; Patent Number 5,741,868, April 21, 1998.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Calcagni whose telephone number is (703) 305-0595. The examiner can normally be reached on Monday-Thursday from 7:30 to 5:00. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck, can be reached on (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

jac

June 15, 1999

Shrive Beck
Supervisory Patent Examiner
Technology Center 1700